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ity, fairness, justice, and democracy. Indeed all high intellectual effort, whether in science or in the humanities, embodies this spirit. I can think of no happier illustration of this fact than the reply of the celebrated American artist, Edwin A. Abbey, when he was asked why he was so particular about the historical exactness of every detail, being assured that he was the only one who would know the difference. He replied by quoting the following verse:

In the elder days of art,
Builders wrought with greatest care,
Each minute and unseen part;
For the gods see everywhere.

He said:

It is because I can't forget those lines that I must make things as right as I know how, even if nobody is the wiser. "The gods see everywhere."

It is this spirit of honesty with one's self for the sake of honesty and truth that pervades all genuine intellectual effort, whether in science or in the humanities, and infiltrates into the body politic of a nation comprising true scholars among its people. It is one of the imponderables of civilization and the more our nation indulges in it and fosters it the higher will our civilization be.

The men who live in the hearts of the human race as a source of inspiration and greatness are those that have unconsciously contributed to civilization out of the greatness of their souls and their work. It is not the great financier, the captain of industry, or the merchant prince who lives through the ages, but rather the men who have "contributed materially to the fulfillment of man's destiny and bequeathed to future generations some new particle of truth, of beauty, of justice"—a Michael Angelo, a Newton, a Shakespeare, a Darwin, a Pasteur, a Franklin, a Lincoln. It is the spirit of such men that lives in a people and makes a nation truly great. Lowell in commenting on the industrial accomplishments of this nation put the whole matter most aptly when he said it is

with quite another oil that those far-shining lamps

of a nation's true glory, which burn forever, must be filled. It is not by any amount of material splendor or prosperity, but only by moral greatness, by ideas, by works of imagination that a race can conquer the future. . . . Of Carthage, whose merchant fleets furled their sails in every part of the known world, nothing is left but the deeds of Hannibal. . . . But how large is the space occupied in the maps of the soul by little Athens. It was great by the soul, and its vital force is as indestructible as the soul.

This, I take it, is the spiritual force that we as students of the sciences must join hands with students of the humanities in maintaining and increasing in the world. And I am constrained to believe that, despite the apparent zeal for material development in this country, this spirit of moral greatness has ever been present here although, at times, it may have slumbered. If anything has been clearly demonstrated during the last five years it is that there are multitudes of young men and women that are ready and eager to give their all even unto death for truth and its corollaries, justice, freedom, and democracy. And it is appropriate that we here dedicate ourselves to the furtherance of this spirit and that we here resolve that we shall maintain it and if possible increase it in our beloved nation. It is you young men and women who must take the torch of intellectual idealism borne by many of your illustrious predecessors and pass it undimmed through the coming years to your successors.

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USES OF PLANTS BY THE INDIANS

PROBABLY many who are interested in wild plants have wondered what uses were made of them by the Indians before white men came. Dr. Melvin R. Gilmore has recently published¹ such an account (relating chiefly to the region of Nebraska) which it has seemed desirable to review in the following form.

While we are familiar with the changes

¹ "Uses of Plants by the Indians of the Missouri River Region." In *Thirty-third Ann. Rept. Bur. Am. Ethn.* (1911-1912), pp. 43-154, 33 pl., 1919.

in the flora which have taken place since the occupation by white men, we know little of the influence of the natives previous to that time. The early explorers made little attempt to learn what the Indians knew about plants and since that time such knowledge has become increasingly difficult to obtain.

Their cultivated crops were corn, beans, squashes and pumpkins with several varieties of each; also tobacco (*Nicotiana quadri-valoris*), all probably of Mexican origin. Apparently they did not cultivate the wild plants which grew about them but must have scattered many of them by accident during their travels. Sunflowers were cultivated by the North Dakota tribes and some others, but not by those of Nebraska so far as known. Dr. Gilmore suggests that a sort of water-melon described by the different tribes as formerly cultivated among them may have been native to America. The chief evidence of this is the abundance of the fruits among various tribes as reported by early explorers.

About 200 species of plants are enumerated with notes upon their uses as well as the Indian names and their derivation in the Dakota, Omaha, Winnebago and Pawnee languages. In the following summary the plants have been grouped according to their uses.

Food.—In addition to cultivated crops, common wild fruits and nuts, the grains of wild rice, tubers of yellow lotus and roots of tipsin (Dakota name of *Psoralea esculenta*) were of special importance. The remainder include mushrooms (elm caps, morels, three species of puffballs, a bracket fungus, also corn smut), tubers of arrow-leaf, Indian potato (*Apios*) and Jerusalem artichoke; subterranean fruits of ground bean (*Falcata*), seeds of wild flax (*Linum lewisii*), berries of ground cherry (*Physalis heterophylla*), fruits of prickly pear, bulbs of wild onion and wood sorrel. Tender tops of lambsquarters and stem bases of bulrush (*Scirpus validus*); young sprouts, flower buds and green pods of milkweed; sugar from hard and soft maple, also box-elder. In time of shortage stems of prickly pear, fruits of wild rose and red haw were used.

The nutritious roots of tipsin were dug in quantities in spite of the difficulty of securing them. They were used fresh or peeled and braided in strings to dry for winter use. The tubers of yellow lotus, also the fruits of plums, sand cherries and chokecherries were dried for winter, the entire fruits of the latter being first pounded into a pulp.

Beverages, Etc.—Dried leaves of red root, fragrant giant hyssop and coneflower (*Ratibida*), also young leaves of wild strawberry and raspberry for tea; leaves of sumac, bearberry and bark of red dogwood for smoking; resin of compass plant and skeleton weed (*Lygodesmia*) for chewing gum.

Arts and Crafts.—Elm for lodge posts, mortars and pestles; osage orange for bows; ash for bows and pipe-stems; rough dogwood for arrow shafts; willow for baskets. *Yucca* leaves, nettle stems and inner bark of basswood for fiber, sloughgrass (*Spartina*) for thatching, big blue-stem (*Andropogon furcatus*) to support the earth covering of the lodges; bulrush stems for matting, birch bark for household utensils and torches. Lichens (*Parmelia borreri* and *Usnea barbata*), buds of cottonwood, roots of black walnut, blood root and sumac for dye. Roots of *Yucca* for soap; juice of prickly pear for mucilage; down of cat-tails for pillows and bandages; stems of scouring rushes for polishing. On the treeless plains *Yucca* leaves bound together served as a fire drill, the dried stem as punk.

Ornament.—Seeds of *Erythrina*, China berry and wild cucumber (*Micrampelis*) for beads, sweet grass, sweet clover, wild bergamot, fragrant bedstraw (*Galium triflorum*), fruits of meadow rue and prickly ash, seeds of columbine for fragrance; berries of pokeberry for stain. Of the wild bergamont the Pawnee recognized four forms which differed in fragrance.

Toys.—Pembina² stems for popguns, the wadding being nettle fiber, inner bark of elm,

² A corruption of the Chippewa name for *Viburnum opulus*. Dr. Gilmore states that it is already in use by the people of northern North Dakota and Manitoba, and suggest that it be adopted in place of the inappropriate "high-bush cranberry."

birch bark or tops of *Artemisia*. Cottonwood leaves for toy tipis and moccasins, the green pods for beads. Pods of spider bean (Pawnee name for *Acuan*) black rattle-pod (*Baptisia bracteata*) and little rattle-pod (*Astragalus carolinianus*) for rattles. Jack-in-the-pulpit seeds were used in gourds for rattles.

Medicine.—Roots of hop, canaigre, wild four-o'clock (*Allionia*), wind flower (*Anemone canadensis*), blue cohosh, wild black currant, wild liquorice, prairie clover, sumac, purple mallow (*Callirrhoe*), sweet cicely, cow parsnip, gentian (*G. puberula*), butterfly weed, bush morning glory, ground cherry (*P. lanceolata*), wild gourd, purple cone-flower, cup plant and burdock.

Leaves of red cedar, curled dock, pasque flower, wild liquorice, spurge (*E. serpyllifolia*), sumac, touch-me-not, verbenia (*V. hastata*), wild bergamot, rough pennyroyal and fetid marigold. Tops of cow parsnip, wild mint, broom-weed (*Gutierrezia*), sticky head (Pawnee name for *Grindelia*), milfoil and wild sage (*Artemisia* spp.). Flowers of lily (*L. umbellatum*) and false lupine (*Thermopsis*). Berries of red cedar, seeds of hop and sunflower.

Corms of Jack-in-the-plpit and blazing star; rootstocks of sweet flag and blue flag; bark of roots of oaks and Kentucky coffeetree; inner bark of red elm, stems of skeleton weed.

The greater number of these were steeped in water and used for various ailments, most commonly fevers and intestinal disturbances. A few, such as sweet flag and purple cone-flower, were used in various ways. Cedar twigs, roots of purple mallow and cup plant were burned and the smoke inhaled for colds; flowers of false lupine were burned for rheumatism, the smoke and heat being confined to the affected part by a close covering.

Crushed leaves of dock were applied to draw suppuration, of sumac for poisoning, of touch-me-not for rash; roots of sweet cicely and cow parsnip for boils. Roots of butterfly weed were eaten raw for throat and lung trouble.

The fine stems of leadplant, rabbit foot (Pawnee name for *Lespedeza capitata*) and

an aster were broken into short pieces, attached to the skin by moistening one end with the tongue, and burned for neuralgia and rheumatism. [This treatment, known as moxa, is found elsewhere and an Asiatic species of *Artemisia* is named *A. moxa*.] The collecting of roots of wild gourd and butterfly weed was done only by certain persons of the tribe.

Charms and Ceremonies.—Mystic properties were assigned to cottonwood, ash yellow lotus, wild gourd and cardinal flower. Flowers of pasque flower, spiderwort and wild rose were revered. Fruits of long-fruited anemone were used for luck at cards; seeds of columbine, love seed (*Cogswellia daucifolia*), roots of bloodroot and ginseng, roots and flowers of cardinal flower, plants of dodder and fuzzy top (*Artemisia dracunculoides*) for love charms. Sweet grass and wild sage (*Artemisia* spp.) for incense.

Poison ivy was known and dreaded. Moonseed was called "thunder grapes," "ghost fruit" and "sore mouth," while spurges and *Parosela enneandra* were regarded as of poisonous nature. The juice of red false mallow and purple coneflower were used to make skin insensible to heat. The compass plant was associated with lighting and its dried root burned during storms. Cedar boughs were placed on tipis for the same purpose.

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SCIENTIFIC EVENTS AGRICULTURE IN ALASKA

THE Department of Agriculture's experiment stations located in Alaska have demonstrated that Alaska is not only a food-producing country but that if the latent resources of the territory are developed the Alaska wheat fields are destined to play an important part in the economic life of the nation. The twenty-first annual report of the Alaska Experiment Station is now available. When it is considered that one of the experiment stations is located in the Yukon Valley only 75 miles